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Rensselaer

Richard T. Lahey, Jr.
Edward E. Hood, Jr. Professor of Engineering

March 31, 1992

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Dr. Edwin P. Rood
Office of Naval Research
Scientific Office Code-1132F
800 North Quincy Street
Arlington, VA 22217-5000

Dear Dr. Rood:

The purpose of this letter is to transmit the fifth quarterly report for ONR grant N00014-91-J-1271, "An Experimental Study of Plunging Liquid Jet Induced Air Carryunder and Dispersion" (Lahey & Drew - CoPI).

This report period has been concerned with performing an analysis of the air entrainment process associated with a plunging liquid jet. In particular, a linear stability analysis was successfully performed.

The salient results of this work are contained in the enclosed draft technical paper, entitled: "The Analysis of a Plunging Liquid Jet - The Air Entrainment Process". It is intended that this paper will be finalized and submitted to the *Journal of Chemical Engineering Communications* in the near future.

In addition, I now have a valid POPS account on the CRAY YMP-8 at Stennis Space Center. Unfortunately, the PHOENICS 1.6 code is not yet operational on that computer.

It appears that there has been a misunderstanding on the part of the computer staff at Stennis Space Center concerning the cost of PHOENICS 1.6. I believe that I have now clarified the situation. In particular, I have told them that CHAM LTD has waived all fees associated with their use of the PHOENICS 1.6 code.

Hopefully, we will have access to this important CFD tool in the near future so that we can perform a multidimensional two-fluid model analysis of two-phase jet spreading in the liquid pool.

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If you have any further questions concerning this report, please contact me or Professor Drew at your earliest convenience [Lahey: 518-276-8579; Drew: 518-276-6903].

Sincerely yours,



Dr. R.T. Lahey, Jr.
The Edward E. Hood, Jr. Professor of Engineering

RTL/ev

cc: • Administrative Grants Officer - ONR
• Director - Naval Research Laboratory
• Defense Technical Information Center ✓
• D.A. Drew (RPI)
• F. Bonetto (RPI)

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